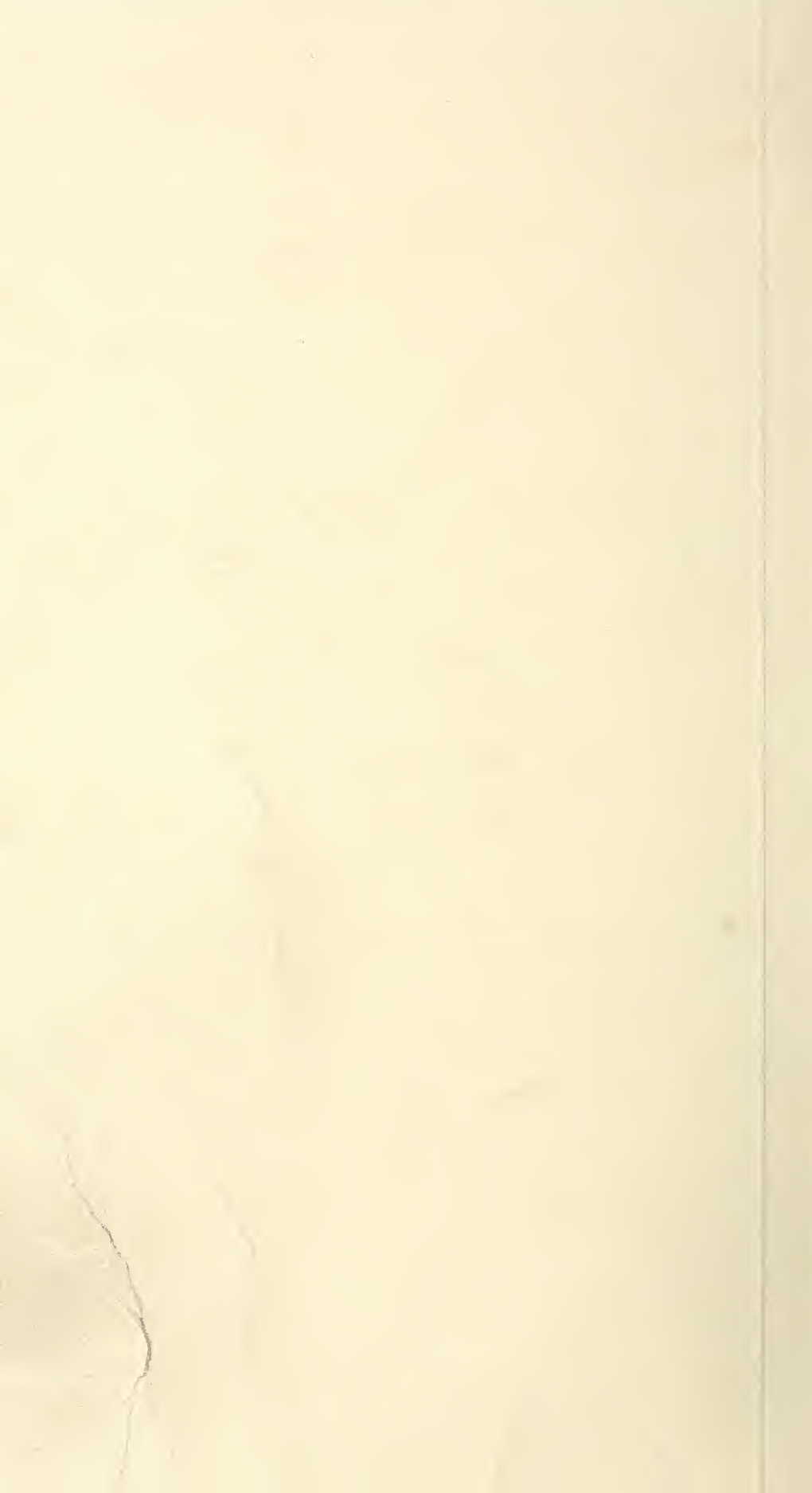


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ARS
Science
Hall of Fame

September 13, 2006

20th



Agricultural Research Service
U.S. Department of Agriculture

A special website is available that features photographs and biographies of all ARS Science Hall of Fame inductees since the inaugural year of 1986. Special features include browse and search functions and video clips from interviews with some members of the Hall of Fame.

Please visit www.ars.usda.gov/careers/hof/

Agricultural Research Service SCIENCE HALL OF FAME

The ARS Science Hall of Fame was inaugurated in 1986. We determined that each succeeding year, one or more present or former scientists with the Agricultural Research Service could be selected, subject to the following criteria:

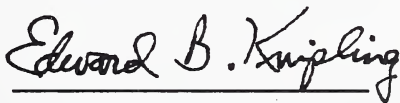
The selectee made widely recognized impact on agricultural research by the solution of a significant agricultural problem through research.

The selectee is a person whose scientific accomplishments and stature continue to affect the agricultural research community and/or influence the development of science-based agricultural policy.

The selectee's character and record of achievement have brought major recognition and credibility to ARS and/or USDA, and are worthy of emulation by younger agricultural scientists.

The selectee's achievements must be or have been nationally and/or internationally recognized by peers in the scientific community.

Today we honor three outstanding scientists by inducting them into the Science Hall of Fame. A plaque citing the achievements of each will be on permanent display in the ARS National Visitor Center at the Beltsville Agricultural Research Center.

A handwritten signature in black ink that reads "Edward B. Knipling". The signature is written in a cursive style with a horizontal line underneath the name.

Edward B. Knipling
Administrator



SCIENCE HALL OF FAME

Wayne W. Hanna

Supervisory Research Geneticist (Retired)
Coastal Plain Experiment Station
Tifton, Georgia

For significant scientific contributions to U.S. food production and the national recreation industries and for related scientific achievements for research on apomixis and interspecific germplasm transfer.

Wayne Hanna's work on the breeding and genetics of turfgrasses has improved the very surface of the earth we walk on.

He created environmentally friendly varieties of bermudagrass that have greater pest resistance and vigor; need less fertilizer, pesticides, and water; and are more resistant to heat, insects, and disease. His bermudagrasses are widely used for forage and on golf courses, athletic fields, and home lawns.

Hanna also developed new varieties of pearl millet for forage that reduce costs of irrigation, pesticides, and fertilizer while producing greater yields and high-quality pasture.

Hanna's seminal research on apomixis (plant cloning) is directed towards producing true-breeding cultivars that retain superior characteristics and hybrid vigor in crops for which traditional hybridization is not economically feasible and in which apomixis does not occur naturally. He has also done vital work on gene transfer in millet that produced several important varieties with improved characteristics and enhanced fertility.

Among Hanna's honors are awards from Turfgrass Breeders Association, University of Georgia Research Foundation, Georgia Golf Course Superintendents Association, Federal Laboratory Consortium, Crop Science Society of America, American Forage and Grassland Council, International Turfgrass Producers, and the Japanese Science and Technology Agency. USDA honors include the Award for Distinguished Service and ARS's Outstanding Scientist of the Year. Hanna is a Fellow of the Crop Science Society of America and the American Society of Agronomy.



SCIENCE HALL OF FAME

Ray D. Jackson

Research Physicist (Retired)
U.S. Water Conservation Laboratory
Phoenix, Arizona

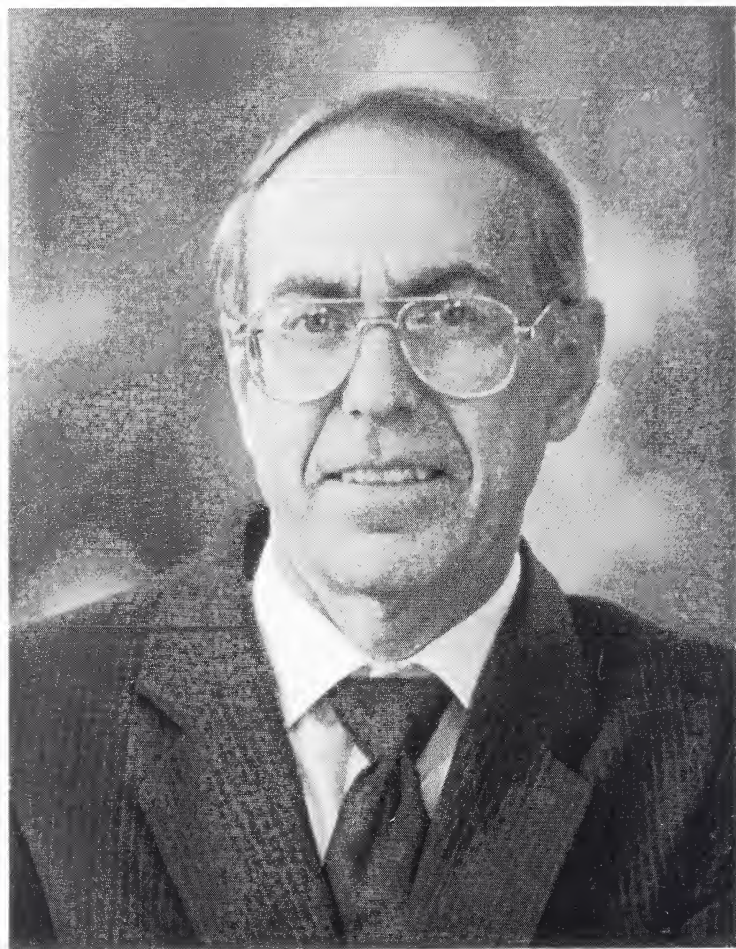
For elucidating the basis of soil-plant-water-atmosphere relationships and developing innovative methods to assess and manage crop status through remote sensing.

The "Father of Remote Sensing," Ray Jackson developed methods used worldwide for evaluating crop health. From satellite-based systems to hand-held devices, Jackson's methods provide quick, inexpensive, noninvasive assessments of the condition of vegetation and soils in individual fields, major geographic regions, and anything in between.

Before Jackson's work, measuring stress on crops from unfavorable environmental conditions was difficult, slow guesswork. Jackson's insight was determining directly from the plants what their condition was by observing the difference between their remotely sensed "body temperature" (emitted infrared radiation) and that of the surrounding air and soil. Healthy plants show a certain degree of difference in temperature from that of the air; a difference that deviates too much from the norm indicates environmental stress. Jackson's crop-water stress index better detects yield-robbing crop stress and can indicate when to irrigate.

His work created great interest in remote sensing of crop stress, and commercial sensors were soon available to farmers and researchers. Shortly, the technology was expanded to use airplane/ground systems and then orbiting satellites. Today, remote sensing of vegetation condition is commonplace around the world.

Dr. Jackson has been honored by USDA with Superior Service Award, Letter of Commendation from the Secretary of Agriculture, Certificate of Merit, Distinguished Service Award, and ARS's Outstanding Scientist of the Year. He is a Fellow of the American Association for the Advancement of Science, the American Society of Agronomy, and the Soil Science Society of America. The Department of the Interior and NASA recognized his work on remote sensing with their William T. Pecora Award.



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SCIENCE HALL OF FAME

Vernon G. Pursel

Research Leader (Retired)
Gene Evaluation and Mapping Laboratory
Beltsville, MD

*For lifetime contributions to genetic and reproductive development
of livestock through pioneering research in genetic engineering
and semen preservation.*

Vernon Pursel is recognized around the world for new reproductive and genetic technologies that quicken the improvement of farm animals. His influence on genetic engineering of livestock and his vital development of frozen semen for the swine industry have profoundly influenced animal and biomedical science.

Research on freezing swine semen for artificial insemination was unsuccessful until Pursel developed the Beltsville Freezing and Thawing Procedure in the 1970s, a method used to this day. He also developed BTS, a diluent that maintains boar semen fertility above freezing temperatures. These and other advances stemming from Pursel's research on animal reproduction and artificial insemination methods have increased use of artificial insemination to include over 80 percent of the U.S. swine herd.

In 1984, Pursel was the first to successfully transfer foreign genes into farm animals. His centrifugation technique made methods used in mouse experiments possible in pigs and cows, and he proved that gene transfer was practical in farm species. Transgenic technology promises better animal growth and milk production, enhanced disease resistance, and higher quality food, as well as inexpensive farm production of human medicines.

Pursel is a Fellow of the American Society of Animal Science. He has received the American Registry of Professional Animal Scientists Distinguished Service Award and the American Society of Animal Science Award in Animal Physiology and Endocrinology. He has also received ARS's Distinguished Senior Scientist of the Year honor and USDA's Distinguished Service Award and Superior Service Award.

ARS SCIENCE HALL OF FAME

1986

Edward F. Knipling

For pioneering research and leadership in development of the sterile insect technique, which led to the eradication of the screwworm, and of other technologies to suppress and manage insect pests.

1987

Howard L. Bachrach

For pioneering research on the molecular biology of foot-and-mouth disease that led to development of the world's first effective subunit vaccine for any disease of animals or humans through the use of gene splicing.

Myron K. Brakke

For consistent, career-long valuable contributions to the science of virology, particularly plant virology.

Glenn W. Burton

For outstanding achievements in forage and turf science, which have had extraordinary effects on the forage-based cattle industry, the turf industry, and agriculture worldwide.

Wilson A. Reeves

For outstanding research and leadership in the field of textile chemical finishing that have significantly benefited agriculture and consumers.

Earnest R. Sears

For pioneering work in wheat genetics and for discoveries on chromosomal mechanisms that established standards in animal, plant, and human genetics.

Orville A. Vogel

For development of the first useful semidwarf wheats and of innovative production systems that made the Pacific Northwest a major source of soft white wheat, inspired similar research efforts throughout the world, and sparked the Green Revolution.

Cecil H. Wadleigh

For elucidating the mechanisms through which crops respond to salinity and water stress and for inspired planning and leadership that enabled and motivated those who worked with him to expand and make use of knowledge of soils, water, and air and their interactions with plants.

1988

Francis E. Clark

For outstanding research leading to greater understanding of soil, plant, and microbial interactions and of nutrient cycling in terrestrial ecosystems.

Edgar E. Hartwig

For research in soybean breeding and genetics that has been a major factor in soybeans becoming the second most valuable U.S. crop and particularly for developing cultivars that thrive in the South.

Ralph E. Hodgson

For significant contributions to the knowledge of ruminant nutrition and for visionary leadership, both domestic and international, in the animal industries.

Hamish N. Munro

For career-long contributions to the science of nutrition, particularly on the relationship of dietary protein and iron to the health of the elderly, and for promotion of studies on aging.

Jose Vicent-Chandler

For research leading to new and greatly improved production systems for beef, milk, coffee, plantains, and rice for Puerto Rico and Caribbean countries.

1989

Douglas R. Dewey

For world leadership in genetics and taxonomy of the Triticeae tribe of grasses and for development of the cytogenetic basis for creating new grass hybrids.

Theodor O. Diener

For conceptualizing and discovering viroids, for leading research on viroid detection and control, and for inspiring new approaches in the search for causes of several serious diseases affecting plants, livestock, and humans.

Karl H. Norris

For developing principles and instruments using the electromagnetic wave spectrum to make rapid nondestructive measurements for evaluating quality of agricultural products.

John F. Sullivan

For engineering contributions to the food-processing and preservation industries, including development of instant potato flakes and of batch and continuous-explosion puffing.

1990

Theodore C. Byerly

For extraordinary contributions as a scientist, research leader, and administrator to the success of agricultural research programs and advances in U.S. and world agriculture.

Gordon Dickerson

For research contributions widely used by breeders to increase production efficiency of cattle, sheep, swine, and poultry.

Robert W. Holley

For isolation and characterization, including the first nucleotide sequence, of transfer ribonucleic acid (tRNA).

Virgil A. Johnson

For outstanding contributions to development of superior bread wheat cultivars and of improved wheat germplasm and for vigorous promotion of national and international cooperation among wheat breeders.

George F. Sprague

For outstanding contributions to effective methods of hybrid corn breeding and germplasm improvement.

1991

John H. Weinberger

For outstanding lifelong contributions in development of fruit varieties and fruit-breeding technology.

Walter H. Wischmeier

For developing the Universal Soil Loss Equation, which has been widely used for three decades worldwide in conservation and management of our natural resources.

1992

Raymond C. Bushland

For pioneering research leading to screwworm eradication by the sterile insect technique and for research leading to control of typhus vectors.

Lyman B. Crittenden

For significant contributions to retroviral genetics, transgenic animal development, and genome mapping in poultry.

Arnel R. Hallauer

For increasing understanding and use of quantitative genetics in plant breeding, which has led to development of many superior corn hybrids worldwide.

1993

John R. Gorham

For scientific leadership and studies that have resulted in solutions of disease control problems and have advanced the basic knowledge of viral and genetic diseases in humans and animals.

Sterling B. Hendricks

For significant contributions as a chemist, physicist, mathematician, plant physiologist, geologist, and mineralogist.

Clair E. Terrill

For scientific contributions and worldwide leadership in sheep production research.

1994

Charles N. Bollich

In recognition of superlative accomplishments in rice breeding and genetics and their consequent benefits to American agriculture.

Chester G. McWhorter

For outstanding contributions to American agriculture through basic and applied research that has resulted in improved weed-management technology, increased yields, and reduced cost of production.

Malcolm J. Thompson

For career research contributions in the field of insect and plant steroid biochemistry.

1995

Harry Alfred Borthwick

In recognition of contributions in elucidating the importance of photoperiodic mechanisms controlling flowering in plants.

William M. Doane

For initiating, leading, and conducting research that created new and useful products and led to the establishment of new industries based on agricultural raw materials.

Walter Mertz, M.D.

For contributions and leadership in elucidating the importance to health of several trace elements and promoting research on dietary risk factors for chronic disorders.

1996

Fred W. Blaisdell

For pioneering research and development of improved structures for soil and water conservation.

Herbert J. Dutton

For pioneering research leading to the establishment of soybean oil as the predominant edible vegetable oil in the world.

Charles Jackson Hearn

For developing improved orange, grapefruit, and tangerine varieties used extensively by U.S. citrus producers to replace trees killed by the 1980 freezes and to expand the citrus acreage.

1997

Morton Beroza

For major contributions to the development of environmentally compatible insect control strategies through discovery of lures, attractants, repellents, and pheromones.

R. James Cook

For extraordinary research on sustainable approaches to improve wheat health and for leadership in the transfer of information and technology resulting in solutions to agricultural problems.

William L. Ogren

For outstanding leadership and fundamental contributions to photosynthetic carbon metabolism leading to the discovery of new opportunities to improve the efficiency and productivity of crop plants.

1998

Thomas J. Henneberry

For conducting basic and applied individual and team research that has had sustained global impact on development and implementation of integrated pest management systems.

James H. Tumlinson III

For research that led to eradication of the boll weevil from the southeastern United States and the discovery of the chemical basis of plant-insect-parasite interaction.

1999

Allene R. Jeanes

For microbiological, chemical, and engineering research that created urgently needed, life-saving industrial polymers made from agricultural commodities.

Charles W. Stuber

For pioneering the use of molecular markers in identifying, mapping, and manipulating quantitative trait genes.

Richard L. Witter

For outstanding research contributions and leadership in the field of avian tumor viruses.

2000

Virginia H. Holsinger

For research leading to increased use of milk products and for humanitarian efforts in developing nutritious formulations for international food donation programs.

Marvin E. Jensen

For advancements in irrigation scheduling using computer models to estimate soil-water balance and for advancements in evapotranspiration theory.

Harley W. Moon

For contributions to a fundamental understanding of intestinal diseases in livestock and for development of effective control programs for these diseases.

2001

Lawrence A. Johnson

For pioneering research in developing the first useful technology for gender preselection of animal and human offspring and for outstanding contributions to semen preservation and artificial insemination in swine.

William E. Larson

In recognition of a pioneer who respected soil as a natural resource and devoted a research career toward improving its quality.

William L. Mengeling

For outstanding research contributions and leadership in the field of viral diseases of swine.

2002

George Inglett

In recognition of the development of novel, patented food ingredients including Oatrim and Nutrim, which have had a sustained beneficial effect on the American diet.

K. Darwin Murrell

For landmark research on parasites of veterinary and medical importance, especially trichinellosis of swine, and innovative development and leadership of laboratory and agency-level programs that established and advanced objectives of the Agricultural Research Service.

Stuart O. Nelson

For pioneering research on the dielectric properties of agricultural materials, applications of radio-frequency and microwave energy, and electrical measurements for moisture sensing in cereal grains.

2003

Edward B. Bagley

For outstanding research in rheology and food science that generated fundamental understanding of flow mechanics; and for pioneering concepts in super-absorbent materials that resulted in one of the most successful technology transfers in USDA history.

Janice M. Miller

For pioneering research in understanding, diagnosing, and controlling bovine leukemia, transmissible spongiform encephalopathies, and other chronic infectious or zoonotic diseases of ruminants.

2004

Donald K. Barnes

For remarkable contributions to alfalfa breeding and genetics, mentoring of plant breeding students, and service to ARS and the scientific community.

Ruth Rogan Benerito

For applying physical chemistry to solve problems that led to improved procedures and new uses for renewable resources such as cotton, wood, and paper.

Keith E. Gregory

For outstanding research contributions in genetics and breeding of beef cattle and for leadership of ARS research programs.

2005

Charles W. Beard

For outstanding contributions in poultry health research, in professional and organizational leadership, and in developing biocontainment concepts and systems for animal agriculture.

Nelson A. Cox

For lifetime contributions of distinctive research benefitting the poultry industry and public health through development and transfer of technologies that reduced foodborne pathogens, particularly Salmonella and Campylobacter.

Sigmund Schwimmer

For a distinguished career of scientific excellence in enzymology and its application to food science and human food products and quality.

Tien C. Tso

For outstanding research contributions and leadership in plant physiology and phytochemistry and their use to advance plant science.

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